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16. Abstract (MAXIMUM 200 WORDS) <p>The U.S. Coast Guard is in the Concept Exploration Phase of its Integrated Deepwater System (IDS) acquisition. This project will define the next generation of surface, air and command, control, communications, computers, intelligence, sensors, and reconnaissance (C4ISR) assets used to perform the Coast Guard's missions in the Deepwater environment (>50 NM off the U.S. coastline). A ship's crew represents a major life-cycle cost of operating and maintaining a USCG ship. Reducing shipboard work requires an understanding of the mission and support requirements placed on the ship and its crew; how these requirements are currently met; and how requirements might otherwise be met to reduce workload and crew size.</p> <p>The objective of this effort was to support the development of an optimized crewing strategy for the surface platform of the IDS by surveying work-reducing approaches of other maritime fleets (foreign coast guards and navies, and commercial fleets). From the data collected, strategies for shipboard work reduction that may be considered for adoption by the Deepwater Project were identified and analyzed according to performance and costs factors. Each strategy developed during the effort was based on the approaches and techniques observed by the maritime organizations surveyed.</p>			
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Executive Summary

The U.S. Coast Guard (USCG) is in the Concept Exploration Phase of its Deepwater Capabilities Replacement Project. This project will define the next generation of surface, air and command, control, communications, computers, intelligence, sensors, and reconnaissance (C4ISR) assets used to perform the Coast Guard's missions in the Deepwater environment (>50 NM off the U.S. coastline). A ship's crew represents a major life-cycle cost of operating and maintaining a USCG ship. To reduce shipboard work requires an understanding of the mission and support requirements placed on the ship and its crew; how these requirements are currently met; and how requirements might otherwise be met to reduce workload and crew size. As part of early technology investigations, the need exists to (1) analyze the workload requirements of the Deepwater system, (2) identify means to control the amount of work performed aboard Deepwater Cutters, and (3) to optimize ship manning in accordance with the extent of ship's work and mariner work productivity. In view of these needs, the overall objective of this effort was to support the development of an optimized crewing strategy for the Coast Guard's Integrated Deepwater System (IDS) by surveying work-reducing approaches of other maritime fleets.

The approach followed in this project was to examine currently implemented workload and manpower-reducing strategies of commercial maritime fleets, U.S. and foreign navies, and foreign coast guards. Existing crew reduction efforts were surveyed and assessed according to:

- Strategies employed to reduce workload
- Effects of those strategies on mission effectiveness and safety
- Effects of technology and automation on work reduction
- Costs of implementation
- Life-cycle costs implications of reduced work/crew platforms, and
- Implications of crew reduction techniques on human and system performance.

From these data, strategies for shipboard work reduction that may be considered for adoption by the Deepwater Project were identified and analyzed according to performance and costs factors. Strategies can reduce crew by: (1) reduction of *workload* via application of automation, or (2) task and procedure redesign.

Ten workload reducing strategies were generated, as follows:

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|---------------------------------------|--|
| • Damage Control Strategy | • Bridge Strategy |
| • Multiple Crewing Strategy | • Engineering Strategy |
| • Risk Acceptance Strategy | • Modularity Strategy |
| • Deck Strategy | • Use of Enabling Technologies |
| • Ship / Personnel Readiness Strategy | • Design for Operability and Maintainability |

This report does not advocate the adoption of any strategy. Rather, what is reported is simply what other fleets have tried, and what may be: (1) considered by the USCG for possible acceptance within the IDS, (2) selected for further review and analysis, or (3) rejected.